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THE RELATION OF LOCOMOTOR ATAXIA AND PARESIS.*

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In the whole chapter of locomotor ataxia there is no question of greater importance than the relation which this affection bears to the general paralysis of the insane. The importance of this relation is not merely a clinical one, but has a much deeper significance as bearing upon the underlying nature and ætiology of the two diseases. In the present communication there will be no discussion of the symptomatology of tabes or of paresis. My remarks will be confined to the combinations of the two diseases and the nature and significance of the so called "taboparesis." When they occur together is it to be regarded as a mere coincidence or complication, or are the two affections essentially the same in nature, differing only in their localization?

As is well known, tabes dorsalis is a disease characterized by degenerative changes in the posterior roots and posterior columns of the spinal cord. An antecedent syphilis is now generally regarded as the essential ætiological factor in the production of this degeneration (variously estimated from fifty to ninety per cent. of the cases). This is not syphilis in the ordinary acceptation of the term; but presumably a toxic state following in its wake, the so called parasyphilis or metasyphilis.

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Paresis, on the other hand, is a degenerative affection of the cerebral cortex, a degeneration of the association and projection neurones of the brain. It bears the same ætiological relation to antecedent syphilis as does tabes (according to Mendel occurring in seventy-five per cent. of the cases). This relation to syphilis constitutes an important bond of union between these two affections, which are so frequently found associated. Indeed, so close has this relation appeared to Moebius that he has termed paresis the *"tabes of the brain,"* and no less an authority than Fournier has said of tabes that it is not an affection of the spinal cord alone, but one of the cerebrospinal axis.

The Combination Form of Tabes and Paresis (Taboparesis).—The clinical course of events in the development of taboparesis may be as follows: Symptoms of locomotor ataxia may appear first, this affection running its usual course, the symptoms of paresis supervening. Such paretic indications may develop within a few months, or may not appear until after the lapse of many years. In rare instances as long a period as twenty years has elapsed between the onset of the tabes and the first symptoms of dementia paralytica. On the other hand, the case may begin as one of paresis, the tabetic symptoms developing subsequently. In not a few of the cases paresis and tabes begin simultaneously and run their course together. The importance of tabetic degenerations in the course of general paresis was first pointed out by Westphal in 1860. This combination, the taboparesis, occurs so frequently that it cannot be regarded as an accidental one, or as a mere coincidence. Nageotte found that two thirds of his cases of paresis presented symptoms of locomotor ataxia. Shaffer found the same complication in three fourths of his cases. Binswanger, who is somewhat stricter

in his interpretation of what constitutes a tabes occurring in the course of paresis, records the complication in one fifth of his cases. I would emphasize the fact that these statistics are not based upon tabetics who were attacked with paresis, but refer to cases of paresis in which symptoms of locomotor ataxia are present. The proportion of cases of tabetics developing paresis is certainly very much smaller.

In the clinic for nervous diseases of the Cornell University Medical College, under the direction of Professor C. L. Dana, there have been treated during the past six years 164 cases of locomotor ataxia; of this number sixteen only presented the mental or somatic symptoms of general paresis.

Clinical Types of Taboparesis.—In order to show the numerous varieties and manifold clinical combinations which may be presented by the union of tabes and paresis, I will mention a series of clinical groups as outlined by Nageotte. It will be seen that these furnish nearly every possible transition and combination, from the simple uncomplicated tabes to uncomplicated paresis. Simple tabes; tabes with slight psychical disturbances; tabes with signs of incipient paresis; tabes with well marked paresis; paresis coming on early in tabes; paresis beginning with tabetic symptoms; tabes and paresis in combination; paresis in which the tabes appears late; paresis with only certain tabetic symptoms; paresis without tabetic complications.

The Pathology of Taboparesis.—The pathology of taboparesis has been the subject of much investigation and considerable controversy. It has been held by some that the spinal cord lesions in cases of taboparesis differ from those found in simple tabes. It is asserted that in taboparesis the endogenous degenerations are more numerous and occur more fre-

quently than in true tabes, in which the characteristic root and root zone degenerations are found. While it is true that endogenous degenerations are more frequent in taboparesis, it must be admitted that they are also to be found in the uncomplicated tabes, and cannot therefore be regarded as constituting an essential point of difference. Some observers have also attempted to show that the cortical lesions of the taboparesis differ in their localization from those of true paresis, being distributed over the posterior and inferior convolutions of the brain rather than over the frontal and Rolandic areas, which is the favorite localization in true paresis. Subsequent investigation has also disproved this, and the tendency at the present time is to regard the cortical changes in both affections as essentially the same. Pathological evidence and opinion at the present time is in favor of regarding the lesions occurring in taboparesis and those occurring in simple tabes or uncomplicated paresis as kindred in nature.

I would here mention an interesting pathological change which is found in the cerebral cortex in some cases of locomotor ataxia, cases which presented no demonstrable mental symptoms during life. These cortical alterations are histologically similar to those found in paresis, only much milder in degree. The existence of such alterations in the cortex of tabetics is a further evidence of the intimate kinship existing between the two affections. Such findings may also be regarded as furnishing the anatomical basis for a group of tabetic cases which present very mild symptoms of mental change and deterioration. In such cases paresis may be said to be present, but in a slumbering state. As Dejerine has expressed it, there are many cases of tabes in which the general paralysis remains silent.

Locomotor Ataxia and Other Psychoses.—In an

affection so frequent and so widely spread as locomotor ataxia, it is not surprising that there are occasionally found associated with it other forms of mental alienation, such as paranoia, manic depressive insanity, dementia præcox, and various mental states following drug addictions. These cases numerically are comparatively few, and it may be said that the overwhelming majority of cases developing serious mental symptoms fall into the group of dementia paralytica.

A general idea as to the relation of tabes to insanity other than paresis may be obtained from the combined statistics of Siemerling and Moeli, who found among 12,800 insane sixty-one tabetics. It must also be emphasized that in the course of tabes, mild mental states may develop upon a neurasthenic basis, which are entirely curable, and respond readily to proper therapeutic measures. Such cases may be the cause of great anxiety from the resemblance which they bear to the early stages of paresis, the so called præparesis. This resemblance may be so close that the subsequent course of the case will alone furnish a satisfactory solution of the question. It is also well to recall in this relation the mild cortical changes found in some cases of simple tabes without appreciable mental changes, the silent or slumbering paresis.

In conclusion, it may be said that tabes dorsalis, dementia paralytica, and the combined form of the two affections, all have the common ætiological factor of an antecedent syphilis. The pathological alterations in the cerebral cortex and the spinal cord are essentially the same in both the isolated and the combined forms. The clinical combination of tabes and paresis are so varied and so numerous that a gradual transition may be traced from locomotor ataxia, on the one hand, to general paralysis of the

insane on the other. In fact, it may be said that the more our knowledge of these parasyphilitic affections of the brain and spinal cord increases the more significant appears their combination, and the stronger becomes the tendency to regard them all as essentially of the same nature and origin.

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